



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/709,890	06/03/2004	Chia-Te Lin	NAUP0571USA	3889

27765 7590 09/27/2005

NORTH AMERICA INTELLECTUAL PROPERTY CORPORATION  
P.O. BOX 506  
MERRIFIELD, VA 22116

EXAMINER
----------

CHEN, WEN YING PATTY

ART UNIT	PAPER NUMBER
----------	--------------

2871

DATE MAILED: 09/27/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 10/709,890	Applicant(s) LIN ET AL.	
	Examiner Wen-Ying P. Chen	Art Unit 2871	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 June 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |  |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)            |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date ____ | 6) <input type="checkbox"/> Other: ____  |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-4 and 10-11 are rejected under 35 U.S.C. 102(e) as being anticipated by Lee (US 2004/0036824).

With respect to claim 1: Lee discloses in Figure 3 a display panel comprising:

a silicon substrate (element 100) with a pixel area (regions corresponding to element 179) located in a surface of the silicon substrate;

a micro color filter (element 136) disposed on the pixel area on the silicon substrate;

a liquid crystal layer (element 130) disposed on the micro color filter;

a top alignment layer (element 137) positioned on the liquid crystal layer; and

a transparent conductive layer (element 138) disposed on the top alignment layer;

wherein when light enters into the display panel, only a specific spectrum of light is permitted to transmit through the micro color filter and is then reflected upward by the silicon substrate to form images (Paragraph 0032).

As to claim 2: Lee further discloses in Figure 3 that the display panel comprises a bottom alignment layer (element 133) disposed between the liquid crystal layer (element 130) and the micro color filter (element 136).

As to claim 3: Lee further discloses in Figure 3 that the display panel comprises a bottom alignment layer (element 135) formed as to increase light reflection (Paragraph 0029) disposed between the silicon substrate (element 100) and the micro color filter (element 136).

As to claim 4: Lee further discloses in Figure 3 that the display panel comprises a driving circuit disposed on the surface of the silicon substrate, the driving circuit comprising a plurality of metal electrodes (element 139) to reflect incident light through the micro color filter (element 136) upward to form images.

As to claim 10: Lee discloses in Figure 3 a display panel comprising:

- a silicon substrate (element 100) with a first pixel area, a second pixel area, and a third pixel area (regions corresponding to element 179) defined in a surface of the silicon substrate;
- a first micro color filter, a second micro color filter, and a third micro color filter (element 136) respectively disposed in the first pixel area, the second pixel area, and the third pixel area on the surface of the silicon substrate;
- a bottom alignment layer (element 133) disposed on the first micro color filter, the second micro color filter, and the third micro color filter;
- a liquid crystal layer (element 130) disposed on the bottom alignment layer; a top alignment layer (element 137) disposed on the liquid crystal layer; and
- a transparent conductive layer (element 138) disposed on the top alignment layer;

wherein when light enters into the display panel, lights of a first specific spectrum, a second

Art Unit: 2871

specific spectrum, and a third specific spectrum are reflected from the first pixel area, the second pixel area, and the third pixel area respectively (Paragraph 0032).

As to claim 11: Lee further discloses in Figure 3 that the display panel comprises a driving circuit (element 179, which is connect to the driving circuit) disposed on the surface of the silicon substrate to drive the substrate and reflect light transmitting through the first micro color filter, the second micro color filter, and the third micro color filter upward to form images.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out

Art Unit: 2871

the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 5-7 and 12-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee (US 2004/0036824) in view of Sperger et al. (US 6342970).

With respect to claims 5-7: Lee discloses all of the limitations set forth in claim 1 but fails to specifically disclose that the micro color filter is composed of a plurality of stacked optical thin films.

However, Sperger et al. teach in Column 2 lines 8-12 the use of color filter in a display panel formed of a plurality of stacked optical thin films comprising a low index optical thin film stack of a silicon oxide type and a high index optical thin film stack of a titanium oxide type.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to construct a display panel as taught by Lee wherein the micro color filter is made of a plurality of optical thin films having specific optical properties as taught by Sperger et al., since Sperger et al. teach that to use dielectric layers as the color filter helps to improve optical quality since dielectric layers have a much higher chemical and thermal stability and mechanical strength (Column 4, lines 18-38).

As to claims 12-15: Lee discloses all of the limitations set forth in claim 10 but fails to specifically disclose that the micro color filter is composed of a plurality of stacked optical thin films and that they are of red, blue and green colored.

However, Sperger et al. teach in Column 2 lines 8-12 and Column 3 lines 15-16 the use of color filter in a display panel formed of a plurality of stacked optical thin films comprising a

Art Unit: 2871

low index optical thin film stack of a silicon oxide type and a high index optical thin film stack of a titanium oxide type in colors of red, blue and green.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to construct a display panel as taught by Lee wherein the micro color filter is made of a plurality of optical thin films having specific optical properties as taught by Sperger et al., since Sperger et al. teach that to use dielectric layers as the color filter helps to improve optical quality since dielectric layers have a much higher chemical and thermal stability and mechanical strength (Column 4, lines 18-38).

Claims 8-9 and 16-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee (US 2004/0036824) in view of Vithana (US 2004/0165128).

With respect to claims 8 and 9: Lee discloses all of the limitations set forth in claim 1, but fails to specifically disclose that the liquid crystal layer comprises liquid crystal molecules aligned in a homeotropic type or a twisted nematic type and that the liquid crystal layer has a thickness in between the range of 0.5 to 10 $\mu$ m.

However, Vithana teaches in Paragraph 0015 a liquid crystal display panel that is aligned in a homeotropic type (vertically aligned) and in Paragraph 0014 that the liquid crystal layer has a thickness of about 3.5 $\mu$ m, which falls into the specified range of 0.5 to 10 $\mu$ m.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to construct a display panel as taught by Lee wherein the liquid crystal display is a homeotropic type having a liquid crystal layer of 3.5 $\mu$ m thickness as taught by Vithana, since Vithana teaches that vertically aligned displays having a specific liquid crystal

Art Unit: 2871

layer thickness result in a desired birefringence thus achieve very high contrast (Paragraph 0004).

As to claims 16 and 17: Lee discloses all of the limitations set forth in claim 10, but fails to specifically disclose that the liquid crystal layer comprises liquid crystal molecules aligned in a homeotropic type or a twisted nematic type and that the liquid crystal layer has a thickness in between the range of 0.5 to 10 $\mu$ m.

However, Vithana teaches in Paragraph 0015 a liquid crystal display panel that is aligned in a homeotropic type (vertically aligned) and in Paragraph 0014 that the liquid crystal layer has a thickness of about 3.5 $\mu$ m, which falls into the specified range of 0.5 to 10 $\mu$ m.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to construct a display panel as taught by Lee wherein the liquid crystal display is a homeotropic type having a liquid crystal layer of 3.5 $\mu$ m thickness as taught by Vithana, since Vithana teaches that vertically aligned displays having a specific liquid crystal layer thickness result in a desired birefringence thus achieve very high contrast (Paragraph 0004).

Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lee (US 2004/0036824) in view of Miyawaki (US 5793452).

Lee discloses all of the limitations set forth in claim 10, but fails to disclose that the liquid crystal layer comprises a cooling system on the silicon substrate.

However, Miyawaki teaches in Column 2 lines 8-32 of a display panel, which comprises a cooling system disposed on the silicon substrate.



Art Unit: 2871

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to construct a display panel as taught by Lee wherein the liquid crystal display comprises a cooling system on the substrate as taught by Miyawaki, since Miyawaki teaches that the cooling system helps to prevent degradation of the picture quality due to heating (Column 1, lines 57-59).

### ***Conclusion***


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Wen-Ying P. Chen whose telephone number is (571)272-8444. The examiner can normally be reached on 8:00-5:00 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert H. Kim can be reached on (571)272-2293. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Wen-Ying P Chen  
Examiner  
Art Unit 2871

WPC 9/22/05

  
**ANDREW SCHECHTER**  
**PRIMARY EXAMINER**